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Fermenting Baits for Trapping Elateridae and Cerambycidae (Coleop.).

By A. B. CHAMPLAIN and J. N. KNULL [1]

During the past five years the writers have made use of fermenting baits in liquid form for the capture of certain beetles in various parts of Pennsylvania. Elateridae and Cerambycidae were the two families of Coleoptera most desired although numerous other interesting insects, including other families of Coleoptera were represented in the catches. The methods used in trapping these insects and the records of some of the captures may be of interest to others.

Various grades of molasses or brown sugar mixed with water were the attrahents used. One part of the better grades of molasses to ten parts of water seemed to give the best results for captures in the groups most desired. This mixture was contained in two quart agate ware pans or one gallon tin pails which were hung on the branches of trees about four to six feet from the ground. Some of these pails were placed near mountain tops, others on upper, middle and lower slopes of mountains, still others in bottom lands and valleys. All contributed a share in the catches, the species taken varying somewhat with the locality and elevation. The best catches were obtained when the bait receptacles were hung in openings or glades adjacent to wooded areas, especially if there were dead, dying or over-matured trees in the region.

Gallon pails allow less evaporation than the two quart pans. There is also less likelihood of pails spilling in the violent summer storms. However, the pans give better catches under proper climatic conditions, no doubt due to the fact that they have a greater evaporating surface.

The traps were generally visited twice a week and the insect

[1] Authors' names arranged alphabetically.

contents was removed, although Coleoptera might remain in the fermenting liquid for a week without deterioration, even in warm weather. Material removed from the traps was transferred, in the field, to vials containing 70% alcohol. In the laboratory, before pinning, the insects were washed in water to remove debris and dissolved bait substance and they were then in perfect condition for drying.

As pointed out by Frost and Dietrich [2] the liquid baits in the traps have three different stages of development: (1) a short period of alcoholic fermentation; (2) a period of acid fermentation and (3) a putrefaction period. Baits are attrahents for Elateridae and Cerambycidae up to the third stage of their development. After this they draw scavangers such as Staphylinidae, Histeridae and Silphidae. When the putrefaction period is reached the writers discard the contents of the traps and add new material.

Undoubtedly many of the insects taken in these traps drop or fly accidentally into the liquid. It is quite evident, however, that many forms go to the traps to feed and are taken in this way. The writers are of the opinion that members of the Scarabaeidae, Elateridae, Nitidulidae and Cerambycidae are foremost among those attracted for feeding purposes. The fact that many males of a certain species are frequently taken in a trap while other receptacles in the same locality do not contain the species at all might be explained by the theory that a single female falling into the liquid thus drew to this particular trap numbers of the other sex. This incident has occurred in a number of cases.

As stated by Champlain and Kirk [3] many of the species taken in traps of this kind are seldom, if ever, collected in general field surveys even though intensive collecting is practiced. It is an excellent method of getting locality and emergence records of many species.

The following records of captures are from Clark's Valley, Rush Township, Dauphin County, unless otherwise stated:

[2] Frost, S. W., and Dietrich, Henry; Ann. Ent. Soc. Amer., V. 22, p. 427, 1929.

[3] Champlain, A. B., and Kirk, H. B.; Ent. News, V. 37, p. 288, 1926.

ELATERIDAE.

ADELOCERA OBTECTA Say, July 21; Laporte, August 6.
ADELOCERA DISCOIDEA Web., July 27.
ALAUS OCULATUS L., numerous in July; five in one pan July 12.
MONOCREPIDIUS LIVIDUS DeG., numerous in July.
LIMONIUS QUERCINUS Say, numerous in June and July.
LIMONIUS BASILARIS Say, numerous in June and July.
LEPTOSCHEMA DISCALCEATUS Say, September 7.
ATHOUS MACULICOLLIS Lec., numerous in July.
ATHOUS BRIGHTWELLI Kby., many specimens in July and August.
ATHOUS CUCULLATUS Say, July 26, August 10; Pond Bank, Franklin County, July 7.
LUDIUS PYRRHOS Hbst., numerous in July.
LUDIUS AETHIOPS Hbst., July 2.
LUDIUS TRIUNDULATUS Rand., Laporte, June 24.
LUDIUS HIEROGLYPHICUS Say, very plentiful in June, July and August.
HEMICREPIDIUS BILOBATUS Say, July 29.
HEMICREPIDIUS MEMNONIUS Hbst., July; Laporte, plentiful in July.
MELANACTES PICEUS DeG., numerous in July and August.
PARALLELOSTETHUS ATTENUATUS Say, numerous July and August.
NEOTRICHOPHORUS ABRUPTUS Say, July 7, 30; Laporte, plentiful in July and August.
DOLOPIUS LATERALIS Esch., plentiful in May and June.
SERICUS SILACEUS Say, plentiful in May and June.
AGRIOTES OBLONGICOLLIS Mel., plentiful in June.
ELATER PULLUS Germ., Laporte, July 29, August 6.
ELATER VITIOSUS Lec., Laporte, July 15.
ELATER VERTICINUS Beauv., numerous specimens in July.
ELATER SEMICINCTUS Rand., numerous specimens the latter part of July; Laporte, July 15.
ELATER RUBRICUS Say, plentiful in June.
ELATER COLLARIS Say, July 2.
ELATER MANIPULARIS Cand., August 3.
ELATER PEDALIS Germ., May 11; Laporte, July 17.
ELATER NIGRICANS Germ., numerous in July.
ELATER MIXTUS Hbst., Laporte, numerous in June.
MEGAPENTHES RUFILABRIS Germ., taken in numbers pan pails at Mont Alto in July by J. O. Pepper.
MELANOTUS COMMUNIS Gyll., numerous in June and July.
MELANOTUS FISSILIS Say, June, July and August; Laporte, very plentiful in July and August.

Melanotus corticinus Say, July 21.
Melanotus sagittarius Lec., Laporte, very plentiful in July.
Melanotus hyslopi Van Z., very plentiful in June and July.
Melanotus glandicolor Mel., Laporte, June 24.

Melasidae.

Dromaeolus cylindricollis Say, Pond Bank, July 11-20, twelve specimens in one pail, none in adjacent traps.

Cerambycidae.

Derobrachus brunneus Forst., numerous in July and August.
Stromatium pubescens Hald., Inglenook, August 9.
Eburia quadrigeminata Say, plentiful in July.
Hypermallus villosus Fab., plentiful in July.
Elaphidion mucronatum Say, very plentiful in August.
Anoplium cinerascens Lec., Hummelstown, June 24, July 14.
Pseudibidon unicolor Rand., Hummelstown, June 9, July 31.
Toxotus cylindricollis Say, August 2; Inglenook, July 26, five specimens.
Gaurotes cyanipennis Say, plentiful in July.
Leptura emarginata Fab., numerous specimens in July and August in Clark's Valley, Inglenook and Hummelstown.
Leptura lineolo Say, numerous in July.
Anoplodera octonotata Say, June 10.
Anoplodera nitens Forst., several specimens in July.
Anoplodera pubera Say, June and July.
Anoplodera vittata Oliv., numerous in June and July.
Anoplodera rubrica Say, plentiful in June and July.
Anoplodera canadensis Fab., Laporte, very plentiful in July.
Anoplodera minnesotana Csy., Laporte, June 20.
Anoplodera proxima Say, July 2, 24.
Typocerus velutina Oliv., plentiful in June and July.
Strangalia luteicornis Fab., June.
Physocnemum brevilineum Say, Hummelstown, June.
Phymatodes varius Fab., July 12.
Cyllene robiniae Forst., numerous specimens in August and September.
Xylotrechus colonus Fab., plentiful June and July.
Xylotrechus aceris Fisher, July 2.
Xylotrechus nitidus Horn, Chambersburg, June 6, 28, J. R. Stear and J. A. Reeves. Three specimens of this rare species were taken in bait pans.
Neoclytus scutellaris Oliv., August 10.
Neoclytus mucronatus Fab., numerous in July.
Neoclytus acuminatus Fab., numerous in June and July.
Anthoboscus ruricola Oliv., July.

Clytanthus albofasciatus Lap., June 10.
Euderces picipes Fab., many specimens June and July.
Purpuricenus humeralis Fab., very plentiful in the southern part of the state in June and July.
Purpuricenus axillaris Hald., numerous specimens in June and July in the southern part of the state.
Microgoes oculatus Lec., Laporte, July 17, 30.
Microgoes debilis Lec., one specimen in June.

Cleridae and Buprestidae.

The following captures were probably due to adults falling into the traps accidentally:
Cymatodera bicolor Say, Inglenook, July 20.
Cymatodera undulata Say, Inglenook, July 20.
Enoclerus liljebladi Wolc., Cold Springs, Adams County, September 6.
Dicerca pugionata Germ., July 26.
Chrysobothris sexsignata Say, July 20.
Chrysobothris verdigripennis Frost, September 7; Laporte, July 29.
Anthaxia quercata Fab., July 26.

The Rhopalocerous Lepidoptera of Scott County, Kansas.

By Virgil F. Calkins, Scott City, Kans.

(Continued from page 229.)

Family Lycaenidae.

Subfamily Theclinae.

Strymon melinus Hubn. Common Hair-streak. A fairly common, and the only Hair-streak, to be taken at almost any time that butterflies are on the wing. I have reared specimens, the larvae of which were feeding on alfalfa flower heads, attended by swarms of small black ants.

S. acadica Edw. The Acadian Hair-streak. But one specimen of this species has been taken in Scott County. It was captured on the State Park Grounds in the northern part of the county. An unusual capture.

Subfamily Chrysophaninae.

Heodes dione Scud. Dione Copper. Uncommon this far south; almost every year a few stray specimens are taken, usually in worn and faded condition.